FOREIGN OWNERSHIP AND THE ELECTRONICS INDUSTRY

Prepared as part of a study on

FOREIGN OWNERSHIP:

CORPORATE BEHAVIOUR AND PUBLIC ATTITUDES

for the

SELECT COMMITTEE ON ECONOMIC AND CULTURAL NATIONALISM

of the

LEGISLATIVE ASSEMBLY

PROVINCE OF ONTARIO

by

KATES, PEAT, MARWICK & CO.

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The views expressed in this report are those of the Kates, Peat, Marwick & Company Study Team, and are not necessarily those of the Select Committee.

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December 10, 1973

Mr. Russell D. Rowe, MPP
Chairman
Select Committee on Economic and
Cultural Nationalism
Room 104
Parliament Building
Queen's Park
Toronto, Ontario

Dear Mr. Rowe:

This report, Foreign Ownership and the Electronics Industry, is submitted to you as part of the overall study of Foreign Ownership: Corporate Behaviour and Public Attitudes which we are conducting on behalf of the Committee. Electronics is the last of six industries to be reported on by our firm.

We would like to express our appreciation to the electronics firms and officials who cooperated in our research effort, and to the staff of the Select Committee and Select Committee members who assisted in reviewing earlier drafts of the report.

In accordance with our terms of reference this report provides factual and attitude information on the electronics industry and its people, relative to the various issues of foreign ownership and control. Policy recommendations are not made since the Committee will be drawing its own conclusions based on this and other information before it.

We have attempted to make the report as complete and objective as possible within the context of available time and resources, and we trust that it will assist the Committee in its deliberations.

Yours truly

KATES, PEAT, MARWICK & CO.

Kates, Peat, Marwick & Co.

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I - INTRODUCTION

BACKGROUND

On March 1, 1972, the Select Committee on Economic and Cultural Nationalism of the Legislative Assembly of Ontario tabled a Preliminary Report in which it referred to a need for assistance in developing a reliable factual basis for future policy recommendations. Toward fulfilling this need, the Committee engaged Kates, Peat, Marwick & Co., together with its sub-contractor, Canadian Facts Co. Ltd., to conduct a study of the perceived and actual behaviour of Canadian- and foreign-controlled companies in specific industries in the province.[1] The terms of reference for this study (dated November 30, 1972) stated that six different industries were to be selected jointly by the consultants and the Select Committee, and that these six industries were to be representative of the service, manufacturing, and resource areas of the Ontario economy.

One of the industries selected was the electronics industry; this report contains the findings of the electronics industry sub-study.

Selection of Electronics

The electronics industry was chosen for the following reasons:

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1. In this study, we have defined a foreign-controlled company as one in which more than 50 per cent of the common stock is held by foreign residents, private or corporate.

1. It represents an important and growing segment of the Canadian and Ontario economies.

2. Its products are widely used both by consumers and by other producers.

3. The importance of innovation in this industry makes it a major potential contributor to Canada's ability to research, develop, design, and market new products.

4. It is one of Canada's secondary industries with a demonstrated ability to export.

5. It has been and will continue to be heavily dependent upon government involvement and support.

6. A considerable segment of the industry is already foreign-controlled, yet there remain several prominent, successful, and growing Canadian-controlled companies.

7. The industry also has many small Canadian-controlled companies with possible growth potential and there are examples in the industry of Canadian-owned multinational companies.

METHODOLOGY AND APPROACH

A standard basic methodology was applied to all six industry sub-studies. It contained the following stages:

1. Selection of four to six companies in an industry sector that may be considered "typical" of the major companies in the industry in terms of foreign/Canadian ownership mix, size, and scope of operations.[2]

2. Investigation in depth of their corporate behaviour on the basis of factual information derived from and about each company.

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2. It is recognized that this sample is too small to be statistically representative.

3. Comparison of the foreign- and the Canadian-controlled companies in the sample to determine the effects, if any, of foreign ownership.

4. Comparison of attitudes among both top management and employees of foreign- and Canadian-controlled companies.

5. Review of industry statistics and conducting of further interviews to assist the analysis of the effects of foreign ownership on the industry.

6. Report on findings regarding company behaviour and management/employee attitudes.

One rationale for in-depth examination of a few companies (the essential element of all the industry sub-studies), rather than a statistically-oriented study of a greater number, is based on the assumption that a company case study approach will identify the most important business characteristics of any given industry. That is, the norms, traditions, and business practices governing relationships between purchaser and seller are believed to be similar for most companies operating in an industry.

In all the sub-studies, available background information on the characteristics and economics of the industry as a whole was analyzed and further interviews conducted where appropriate.

Electronics Industry

In each industry, the standard methodology was adapted to the specific conditions of the industry. In electronics four companies were selected for in-depth examination: two foreign-controlled and two Canadian-controlled. The chief executive officers of four other

companies - both Canadian- and foreign-controlled - were also interviewed in order to strengthen the data base.

The four electronics companies were selected following a preliminary examination of company product lines and published financial statements. Two other companies we selected declined to participate and two of the four that did participate chose not to administer the employee questionnaire.[3] The characteristics of the firms selected were as follows:

- each company had its Canadian head office in Ontario or at least substantial operations in the province
- the four companies represented a mix of Canadian- and foreign-controlled companies and a mix of size from medium to large
- the four companies included firms that specialized in electronics and firms whose electronics division was only a small part of the total business
- the product lines of the companies selected included both consumer and industrial electronics products.

The approach to each selected company was to request a meeting with the chief executive to seek his co-operation in the procedure for investigating his company. At this time, the chief executive was also asked for his own opinions on each subject area of a management checklist

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3. An employee attitude survey was part of the overall study undertaken for the Select Committee and has been reported on in a separate volume. There were difficulties in obtaining the co-operation of some electronics industry firms to administer the questionnaire; the reasons given were primarily related to labour relations.

that had been prepared. A copy of this checklist is attached as Appendix A. At the same time, a statistical questionnaire was left with the company to complete. This questionnaire is attached as Appendix B.

Because of the wide range of products manufactured and markets served by this industry, as well as differences in the structure and operations of companies in the industry, both the statistical questionnaire and the interview guide were aimed at determining product, market, and corporate structure characteristics in addition to behaviour and attitudes. This was done to enable us to separate, as much as possible, behavioural characteristics and attitudes which are due to ownership from those which are due to other factors.

To expand the base of information beyond the companies identified for in-depth study and the interviews of chief executive officers of other electronics companies, the research consisted of further interviews and examination of a variety of periodicals and reports prepared by government and other bodies. The additional interviews included the following:

- officials of the Department of Industry, Trade and Commerce (federal) and officials from other federal departments who are, or have been, concerned with the electronics industry
- union officials of one of the major unions in the industry
- officials of the Provincial Ministry of Industry and Tourism

- officials of the Electronic Industries Association of Canada.

The additional research included the following:

- Statistics Canada information on the industry
- Federal Government reports and foreign-produced documents, such as by the U.S. Department of Commerce, the U.S. National Science Foundation and the Electronics Association of Japan
- business service reports on a large number of companies in the industry
- general literature on the subject, including Science Council reports, material assembled by universities, newspaper articles, and general industry and business periodicals.

Report Organization

The remainder of this report on the electronics industry sub-study first discusses the industry in Canada, and then compares behaviour between foreign- and Canadian-controlled firms, outlines industry attitudes presented to us during the study, and concludes with an interpretation of the findings and a discussion of relevant policy considerations.

THE CANADIAN ELECTRONICS INDUSTRY

The electronics industry is generally recognized as one of the true growth industries of the past two or three decades. A review of government statistics, the casual reading of newspaper articles and advertisements, or even consideration of one's daily activities will clearly indicate the importance of electronics products. Yet there is no generally accepted definition of just what the industry is or of the

manner in which it is structured. The Electronic Industries Association of Canada list of members is significantly different, both by inclusion and exclusion, from the list of companies included in Statistics Canada's SIC Codes 334, Manufacturers of Household Radio and TV Receivers, and 335, Communications Equipment Manufacturers, which are the two industrial classifications most closely relating to the electronics industry. In addition, both are different from a list of electronics companies published by the Federal Department of Industry, Trade and Commerce.

The difficulty in defining the electronics industry is not surprising. Unlike many other industries which are based on the final products they produce, such as pulp and paper or auto parts, the electronics industry is centred on a particular science or method of accomplishing a task. Electronics products may be defined as devices in which there is a variable and controlled flow of electrons and which utilize the qualities of that flow to accomplish various functions. As such, they may be differentiated from electro mechanical devices, such as electrical machinery and home appliances, which do not transmit, control, or manipulate the flow of electrons to produce feed-back, amplification, and related effects.

Products, Companies, and Markets

This "characteristic" gives rise to a wide variety of electronics products and an even greater variety of application of these products. Electronics products range from television sets to navigation systems for ships and aircraft and from vacuum tubes, resistors, capacitors, and integrated microcircuits to telephone, telegraph, and satellite communications systems. Many products contain a mixture of electronic and other

components. While a large portion of the components of a television set are electronic, a complex weapons system may contain only a small portion of electronic gear. As a result, the determination of the "correct" product classification is not clear cut.

Electronics products can be found in such diverse applications as home entertainment, personal and business communications, road and air traffic control, navigation aids for ships and aircraft, weaponry and communication systems for national defence, medical research and diagnosis, education, hotel and airline reservation systems, industrial processing and manufacturing control systems, and components of other manufactured products such as electronic ignition systems for cars.

In view of their variety, their range of application, and their use as major or minor constituents of other products, as well as the innovative nature and relatively low capital intensity of the manufacture of many electronics products, the range of companies involved is almost as broad as the variety of products and applications. Companies engaged in the manufacture of electronics products cover a full size spectrum from organizations employing thousands down to operations involving only a handful of people. Some of these companies are subsidiaries of large multinational organizations; others are subsidiaries of large Canadian-controlled companies; still others are independent Canadian-owned companies. Some of the Canadian-owned companies are, in themselves, small multi-national organizations with subsidiaries in other countries. For many companies the manufacture of electronics products and components is

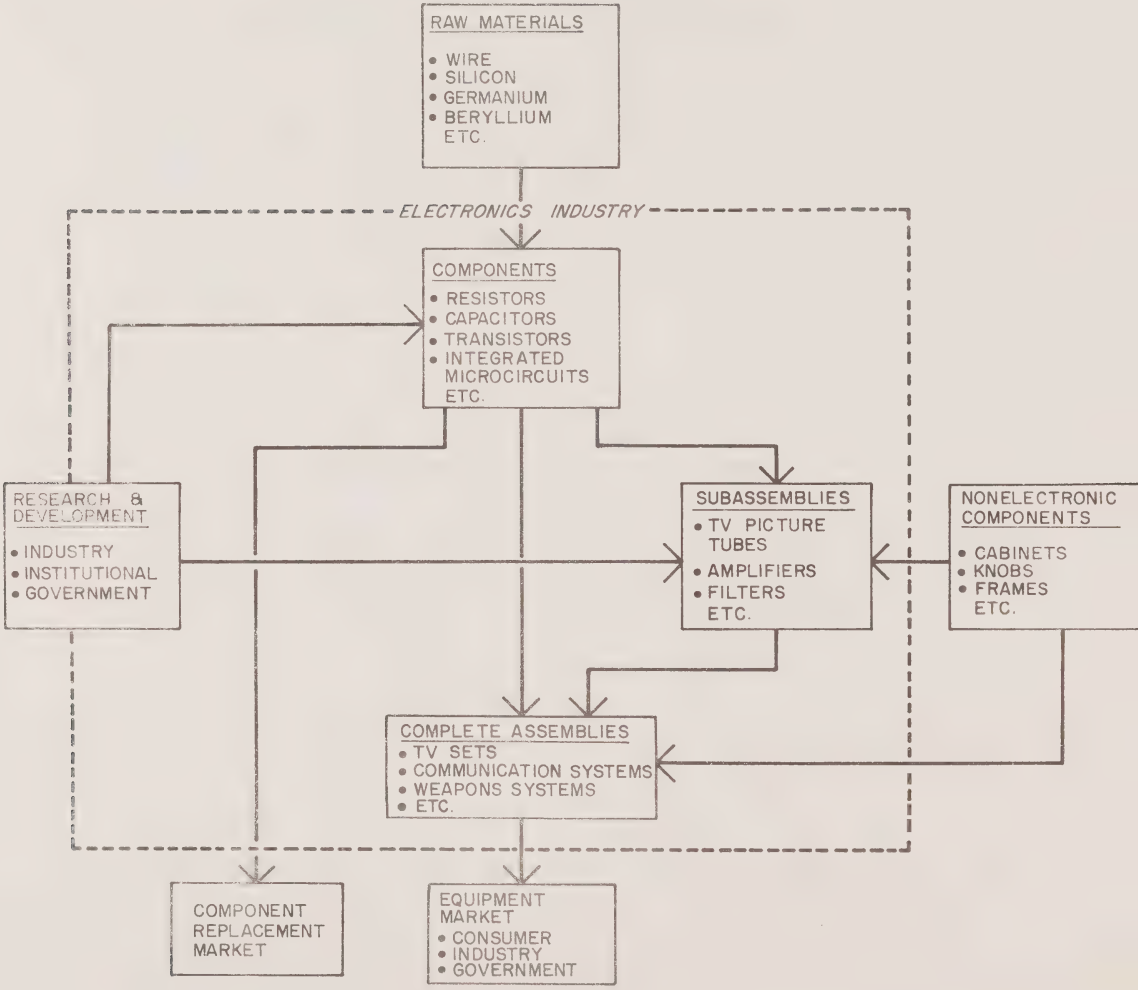
their sole or primary business; for many others it is merely a small part of their total activity. While the majority of electronics products are manufactured by companies concentrating in this area or by companies engaged in a wide range of electrical products manufacture, many companies in widely different businesses can count electronics as a constituent of their products.

In Canada the markets of the electronics industry embrace all sectors of society; consumers, the manufacturing and service industries, and all levels of government. In addition, its products can be found in most countries of the world. By serving all sectors of society with a wide range of products specifically designed for each sector, the industry is involved in a variety of marketing approaches uncommon for an industry of this size. The need to export further complicates and expands the marketing effort. As a result, the industry depends on innovation, not only of products and production methods, but also of marketing approaches.

Exhibit 1, overleaf, contains a graphical illustration of the structure of the electronics industry.

EXHIBIT I

STRUCTURE OF ELECTRONICS INDUSTRY



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II - INDUSTRY ANALYSIS

In this section, we will discuss the output of the Canadian electronics industry and foreign trade in electronics products, as well as value added, employment, location, research and development, and ownership characteristics in the industry. In this discussion we will make use of statistics relating to a variety of aspects of the industry. While the delineation of the industry used here to derive the statistics may differ somewhat from other possible definitions, we do not consider that such other definitions, reasonably based, would significantly alter the picture of the industry which emerges.

Because of the difficulty of defining the industry and its products, as discussed above, two different approaches have been used in assembling the data. Since commodity-based statistics are available for production, imports, and exports, these have been used to portray the characteristics of output and trade. Other characteristics, such as employment, value added, location, and ownership are based on SIC codes 334 and 335 mentioned earlier. There are differences in these two definitions because some electronics products are manufactured by establishments not listed under these classification codes and because the products of the establishments listed under these codes are not wholly electronic.

PRODUCTION, IMPORTS AND EXPORTS

For the purpose of reviewing the production, import and export performance of the Canadian electronics industry, electronics products have been classified into three major groups:

EXHIBIT 2

CANADIAN ELECTRONICS INDUSTRY - PRODUCTION, IMPORTS AND EXPORTS
($ Millions)

YEAR	HOME ENTERTAINMENT PRODUCTS			TELEPHONE AND TELEGRAPH PRODUCTS			ALL OTHER ELECTRONICS PRODUCTS			ALL ELECTRONICS PRODUCTS		
	Production	Imports	Exports	Production	Imports	Exports	Production	Imports	Exports	Production	Imports	Exports
1962	114	14	3	108	28	6	268	101	48	490	143	57
1963	117	15	6	124	24	9	304	102	43	544	140	58
1964	134	23	8	133	25	11	297	143	41	564	191	59
1965	140	35	8	144	25	14	299	176	54	583	237	77
1966	171	50	20	174	29	11	367	278	75	712	357	106
1967	175	67	25	234	35	19	419	312	91	828	414	135
1968	190	89	30	230	32	49	480	310	132	900	431	211
1969	230	124	34	238	37	55	567	391	98	1035	552	187
1970	196	124	29	249	43	68	500	401	136	945	568	233
1971*	231	150	30	264	41	56	535	453	152	1030	645	239

* Preliminary Figures

Sources: Statistics Canada - 65-004, 65-007, 43-205, 43-206,
Canadian Electronics Engineering

- home entertainment products
- telephone and telegraph products
- all other electronics products.

Data for each of these groups and for the total are given in Exhibit 2, opposite, for the nine year period from 1962 to 1971.

During this period, total output grew by a factor of more than two, displaying a compound annual growth rate of 8.6 per cent. During the same period, exports grew much more steeply at a compound growth rate of 17.3 per cent per year; on the other hand imports in 1971 were approximately 2.7 times exports and displayed a compound growth rate of 18.2 per cent per year. In 1962 exports were only 11.6 per cent of total Canadian production while in 1971 they had grown to 23.2 per cent of production. But imports in 1962 were already 29.2 per cent of Canadian production and, by 1971, had grown to 62.6 per cent of total Canadian production.

From the above figures and Exhibit 2 we can see that the output of the industry, and even more, exports of the industry have displayed very impressive growth during the nine year period, although the growth slowed considerably following 1968. However, imports of electronics products are very high and are making greater and greater inroads into the total Canadian market. The growth of imports and exports reflects the world-wide trend toward internationalization in the electronics industry, but the growing excess of imports over exports shows a declining competitive position for Canada.

Turning to the three product groups shown in Exhibit 2, the diverse grouping called "all other electronics products" is the largest of the three segments whether measured by production, imports, or exports. However, telephone and telegraph products showed the largest growth in production and this group as well as home entertainment products showed the largest growth in exports, but these were very small in 1962. In addition, telephone and telegraph products showed the slowest growth in imports while, as might be expected, home entertainment products had the highest growth in imports with a compound annual growth rate of over 30 per cent.

Turning to another approach for grouping electronics products, let us look at the electronic components segment of the industry. Components, including resistors, capacitors, receiving tubes, picture tubes, semi-conductors, integrated circuits, relays, and many other devices, are the basic building blocks of all final electronic systems. The Canadian market for components has grown from $89 million in 1960 to $310 million in 1971, that is, by a factor of almost 3.5 in the eleven year period. However, during this same period, imports grew from $25 million to $209 million. As a result, the use of imported components grew from 28 per cent of the total market in 1960 to two thirds in 1971. Thus, the components segment of the Canadian electronics industry is clearly not being successful in competing with foreign producers. The competitive position of components manufacturers is being eroded even more rapidly than that of the producers of home entertainment products.

In a more positive vein, it is interesting to note that Canada's total exports of end products in 1970, excluding exports of automobiles to the United States, amounted to just over $2.4 billion. Exports of electronics products, all of which were considered end products in deriving this total, amounted to $233 million in 1970 or just under ten per cent of the total. When it is considered that the output of the electronics industry in 1970 was only about two per cent of Canada's total manufacturing output, it can be seen that the electronics industry is an important contributor to Canada's rather limited exports of finished products.

Comparison with U.S. and
Japanese Electronics Industries

A comparison of the U.S. electronics industry with the Canadian industry is shown in Exhibit 3, overleaf. Data on production, imports and exports are given for the years 1967 through 1971 for each country. The total production of U.S. electronics products on a per capita basis is nearly double that of the Canadian industry; this is due primarily to the scale of the U.S. defence and space programs which together account for roughly one half of the total U.S. production. The slackening in the rate of growth of electronics production in Canada following 1968 is parallelled by an even more pronounced leveling of longer duration in the U.S. indicating that the Canadian industry was less hard hit during the recent recession in the demand for electronics products in North America.

EXHIBIT 3

CANADIAN/U.S. COMPARISON OF ELECTRONICS INDUSTRY
- PRODUCTION, IMPORTS AND EXPORTS
($ Millions)

YEAR	CANADA			UNITED STATES		
	Production	Imports	Exports	Production	Imports	Exports
1967	828	414	135	19,269	824	931
1968	900	431	211	20,484	1,160	1,067
1969	1,035	552	187	21,131	1,563	1,491
1970	945	568	233	20,273	1,784	1,691
1971	1,030	645	239	19,583	2,045	1,591

Sources: U.S. Industrial Outlook, U.S. Department of Commerce,
Statistics Canada - 65-004
65-007
43-205
43-206
Canadian Electronics Engineering

Imports and exports both form a lower ratio to total production in the U.S. than they do in Canada, indicating a greater degree of self-sufficiency in the U.S. industry. On the other hand, although they are still a considerably smaller factor in the U.S. market than they are in Canada, imports of electronics products have displayed a much higher rate of growth during the past five years in the U.S. In addition, the exports of the U.S. electronics industry have been growing at a slower rate than those of the Canadian industry.

In contrast with North America, the Japanese electronics industry has been growing at a compound annual rate of approximately 25 per cent for a number of years and recently has displayed a growth rate in excess of 30 per cent. Furthermore, the Japanese industry has concentrated much more heavily on home entertainment products which account for over 40 per cent of total production and nearly two thirds of exports; in Canada and the U.S., home entertainment products account for somewhat over 20 per cent and somewhat under 20 per cent respectively of total electronics production, and exports of home entertainment products form even smaller percentages of total exports. To counter the commonly held view that the Japanese industry produces home entertainment products primarily for the export market, it should be pointed out that nearly three fifths of all consumer products production in Japan is consumed in the home market. Furthermore, the exports of the entire Japanese electronics industry, including consumer products, are under 30 per cent of total production, a proportion only slightly higher than that of the Canadian

EXHIBIT 4

CANADIAN ELECTRONICS INDUSTRY - SHIPMENTS, VALUE ADDED AND EMPLOYMENT

Year	Value of Shipments[1] ($ Millions)	Shipments of Goods of Own Manufacture[2] ($ Millions)	Total Value Added ($ Millions)	Total Employment
1962	551	461	294	35,230
1963	608	512	295	36,686
1964	639	540	319	37,203
1965	708	586	371	40,494
1966	858	691	427	45,622
1967	974	809	433	47,433
1968	1,057	881	490	50,120
1969	1,317	947	594	57,022
1970	1,326	925	557	53,135
1971	1,346	916	601	52,319
RATIO 1971/1962	2.44	1.99	2.04	1.49

NOTE: 1. Total value of all shipments from establishments in class including reshipments without transformation.
2. Manufactured value of shipments from establishments in class of items which were transformed in these establishments.

Source: Statistics Canada - 43-205, 43-206, 31-203

industry. The difference is that the Japanese exports are concentrated in the highly visible area of consumer products and their total production is substantially greater than that of Canada.

THE GROWTH OF OUTPUT, VALUE ADDED AND EMPLOYMENT

In this and subsequent paragraphs we focus on the industry as defined by Statistics Canada's SIC codes 334 and 335, manufacturers of household radio and TV receivers and manufacturers of communications equipment respectively. It should be noted that the output figures given here do not match the production figures given previously. As was pointed out earlier, the output levels recorded under these standard industrial classifications may contain products which are not entirely electronic in nature and may exclude electronics products manufactured by industries in other standard industrial classifications.

The total value of shipments, the total value of shipments of goods of own manufacture, the total value added, and the total employment in the Canadian electronics industry are shown in Exhibit 4, opposite, for the years 1962 through 1971. During this nine year period the value of shipments of goods of own manufacture and value added have each grown by a factor of approximately two, indicating no significant change in the roughly two thirds/one third proportions of total manufactured value that value added and purchases respectively comprise. During this period, however, the total value of shipments rose by a factor almost two and one half compared with only a doubling in the shipments of goods of own manufacture.

The difference is due primarily to an increase in transfers amongst establishments within the same company, to an increase in purchases of products for resale from other companies in Canada, and to an increase in imports of products for resale. Employment grew by a factor of less than 1.5 during the nine year period to accomplish the doubling of value added and shipments of goods of own manufacture; this follows the general pattern of secondary manufacturing wherein, due to increases in labour productivity, increases in output are not parallelled by comparable increases in employment.

The industry provides considerable opportunity for the employment of highly qualified manpower in research and development, testing, marketing, and management. It also employs large numbers of semi-skilled labour for production functions. Thus, although many in the industry are highly paid, average incomes are lower than in many other industries.

Exhibit 5, opposite and overleaf, shows comparative statistics on employment, payroll, value of shipments and value added for manufacturers of radio and TV receivers and communications equipment in the U.S. and Canada during selected years from 1958 to 1971. In both categories, radio and TV receivers and communications equipment, the value added per employee was higher in the U.S. than in Canada in 1958 and remained so throughout the period in spite of a significant increase in value added per employee in both categories of the Canadian industry. While the ratio of U.S. to Canadian value added per employee for manufacturers of radio and TV receivers declined substantially during the period to approximately 1.09

EXHIBIT 5

COMPARISON OF CERTAIN CHARACTERISTICS OF THE
CANADIAN AND U.S. ELECTRONICS INDUSTRIES

Canada		United States	
S.I.C. Code	Producer Types	S.I.C. Code	Producer Types
334	Mfrs. of Household Radio and TV Receivers	3651	Radio and TV Receiving Sets

	Employment	Payroll ($ Mill.)	Total Value of Shipments ($ Millions)	Value Added ($ Millions)	Value Added / Total Employment $	Payroll / Value Added %	Value Added / Shipments %
1971							
Canada	7,737	53.2	367.7	121.2	15,665	43.9	33.0
U.S.	89,900	641.8	4,048.6	1,537.5	17,102	41.7	38.0
Ratio: U.S./Canada	11.62	12.06	11.01	12.69	1,092	.950	1.152
1967							
Canada	6,918	34.2	251.1	74.4	10,761	45.9	29.6
U.S.	116,700	643.6	3,846.3	1,404.5	12,035	45.8	36.5
Ratio: U.S./Canada	16.87	18.82	15.32	18.88	1.118	.998	1.233
1963							
Canada	7,951	36.0	186.2	71.6	9,010	50.3	38.5
U.S.	81,264	411.9	2,254.9	912.0	11,222	45.2	40.4
Ratio: U.S./Canada	10.22	11.44	12.11	12.74	1.246	.899	1.049
1958							
Canada	6,641	25.5	119.0	47.0	7,084	54.3	39.5
U.S.	66,505	292.7	1,548.0	594.0	8,931	49.3	38.4
Ratio: U.S./Canada	10.01	11.48	13.01	12.64	1.261	.908	.972

Sources: Department of Industry, Trade and Commerce, Office of Economics, Productivity Branch
Statistics Canada - 43-205, 43-206, 31-203
U.S. Department of Commerce , Annual Survey of Manufacturers

CONTINUED.....

EXHIBIT 5
(CONTINUED)

Canada		United States	
S.I.C. Code	Producers Types	S.I.C. Code	Producer Types
335	Communications Equipment Mfrs.	3661	Telephone and Telegraph Apparatus
		3662	Radio and TV Communication Equipment
		3671	Electron Tubes, Receiving Type
		3672	Cathode Ray Picture Tubes
		3673	Electron Tubes, Transmitting
		3674	Semiconductors
		3679	Electronic Components, n.e.c.

	Employment	Payroll ($ Mill.)	Total Value of Shipments ($ Millions)	Value Added ($ Millions)	Value Added / Total Employment $	Payroll / Value Added %	Value Added / Shipments %
1971							
Canada	44,582	346.3	978.0	479.7	10,760	72.2	49.0
U.S.	775,600	7,308.1	20,281.7	12,246.1	15,789	59.7	60.4
Ratio: U.S./Canada	17.40	21.10	20.74	25.53	1.467	.827	1.233
1967							
Canada	40,515	222.2	723.0	358.3	8,843	62.0	49.6
U.S.	928,800	6,832.0	18,599.7	11,351.7	12,222	60.2	61.0
Ratio: U.S./Canada	22.92	30.75	25.73	31.68	1.382	.971	1.230
1963							
Canada	28,735	133.6	422.1	223.8	7,787	59.7	53.0
U.S.	765,376	4,930.3	12,791.7	7,849.6	10,256	62.8	61.4
Ratio: U.S./Canada	26.64	36.90	30.30	35.07	1.317	1.052	1.158
1958							
Canada	21,681	89.1	200.8	128.6	5,930	69.3	64.0
U.S.	432,321	2,208.6	6,306.5	3,707.7	8,576	59.6	58.8
Ratio: U.S./Canada	19.94	24.79	31.41	28.83	1.446	.360	.919

Sources: Department of Industry, Trade and Commerce, Office of Economics, Productivity Branch
Statistics Canada, 43-205, 43-206, 31-203.
U.S. Department of Commerce, Annual Survey of Manufacturers

in 1971, it did not change significantly for manufacturers of communications equipment, although there was a decline and then a rise during the interim years.

While one must be very careful in making comparisons of this type, particularly for communications equipment where many of the products manufactured are different in the two countries, these figures do indicate a relative increase in the labour productivity of Canadian radio and TV manufacturers which is not parallelled amongst communications systems manufacturers. Part of the explanation may be found in the fact that the labour content of the value added in the communications equipment industry, measured by payroll as a percentage of value added, has risen from 69 to 72 per cent during the period. This in turn may be explained by increased R & D and marketing to achieve export sales on the part of the industry, by a change in the product characteristics, or by many other factors. In the case of household radio and TV manufacturers the labour content of value added did decline from 54 per cent to roughly 44 per cent during the period.

Another interesting comparison is the relationship between value added and total shipments. As was pointed out earlier, the trend in the Canadian industry is for value added to comprise a smaller and smaller proportion of total shipments. Although the percentage in 1971 for communications equipment manufacturers was still higher than for radio and TV manufacturers, the rate of decline has been much greater. In both segments of the U.S. industry value added has not changed significantly as a proportion of total shipments.

EXHIBIT 6

LOCATION OF THE CANADIAN ELECTRONICS INDUSTRY
FOR THE YEARS 1962 AND 1971

	1962	1971
Establishments		
Canada	158	254
Ontario	106	163
% Ontario	67.1	64.2
Shipments of Goods of Own Manufacture		
Canada ($ millions)	461	916
Ontario ($ millions)	276	658
% Ontario	59.9	71.8
Value Added		
Canada ($ millions)	294	601
Ontario ($ millions)	156	369
% Ontario	53.1	61.4
Employment		
Canada	35,230	52,319
Ontario	20,051	29,673
% Ontario	56.9	56.7
Salaries and Wages		
Canada ($ millions)	160.2	399.5
Ontario ($ millions)	82.9	210.9
% Ontario	51.7	52.8

Source: Statistics Canada, 43-205
43-206

CONCENTRATION
IN ONTARIO

Exhibit 6, opposite, shows that the majority of the Canadian electronics industry is located in Ontario, whether the degree of concentration is measured by number of establishments, employment, shipments of goods of own manufacture or value added. In addition, it shows that the percentage of employment in the total industry located in Ontario has remained relatively stable during the ten year period from 1962 to 1971 while the percentage of establishments located in Ontario has declined slightly during the period. On the other hand, the predominance of Ontario in both shipments and value added has increased markedly during the period.

Since the percentage of salaries and wages paid to workers in the industry in Ontario has not changed significantly during the ten year period, the rise in value added in Ontario as a percentage of the total is most likely due to an increase in the relative capital intensity of the industry in Ontario as compared with the rest of Canada. This conclusion is borne out by the fact, as was discussed in the previous paragraphs, that radio and TV manufacturing which is located primarily in Ontario has become less labour intensive whereas communications equipment manufacturing which is not so concentrated in Ontario has not.

The even greater increase in the percentage of shipments of goods of own manufacture[4] from Ontario may be due to an increase in the relative import content of products manufactured in Ontario. It may

4. Includes full manufactured value of goods on which any manufacturing work was done.

also be due to a relative increase in the proportion of finished goods manufactured in Ontario and a comparable increase in the proportion of components and sub-assemblies manufactured outside Ontario for assembly in Ontario.

The higher concentration of employment in Ontario than of salaries and wages paid to Ontario workers implies that average incomes in the industry are lower in Ontario than they are in the rest of Canada. This is difficult to explain. It runs counter to the situation in many other industries where average wage rates tend to be lower outside Ontario and where the more highly paid workers tend to be more concentrated in Ontario. Furthermore other research has indicated that average incomes for similar work are higher in Ontario than they are in the rest of Canada within the electronics industry. The conclusion must therefore be drawn that, on the average, the skill level in the industry is higher outside of Ontario than it is within Ontario.

This last conclusion could well be valid. As was mentioned earlier, the work force in the electronics industry is comprised of a large number of low income, semi-skilled production workers on the one hand and a smaller but still large number of highly paid, highly skilled R & D, marketing, and management personnel on the other hand. The polarization of income levels in this industry is probably greater than that in most other industries. The relative proportions of low and high income personnel vary with the products being produced and the markets being served. As a result, the mix of products being produced outside of

Ontario as compared with that being produced within Ontario could be such that the proportion of lower paid production workers within Ontario is higher than in the rest of Canada.

RESEARCH AND DEVELOPMENT

Electronics is a "high technology" industry. Technology may be defined as information or knowledge about physical relationships that permits some task to be accomplished, some service rendered, or some product produced. Conceptually, technology can be distinguished from science, which recognizes and explains data and observations by means of theoretical relationships. Technology translates scientific relationships into "practical" uses; as such, technology may be considered to be synonymous with engineering.

Compared with most other high technology industries, the electronics industry has a relatively low degree of capital intensity. In most other high technology industries, such as petroleum and chemicals, the technology is concentrated in the process of manufacture; in electronics the technology is concentrated in the product itself.

With the technology concentrated primarily in its products, and with the wide diversity of products produced by the industry, the electronics industry depends on a high level of innovation for success. Although the industry needs various types of innovation, including managerial and marketing innovation, let us concentrate here on technological innovation which provides the products to be manufactured and

EXHIBIT 7

CANADIAN ELECTRONICS INDUSTRY
- RESEARCH AND DEVELOPMENT

Year	(1) Electronics Industry R & D Expenditures ($ millions)	(2) All Industry R & D Expenditures ($ millions)	(3) (1) as % of (2)
1962	17.2	124.5	13.8
1963	22.2	153.2	14.5
1964	29.4	189.4	15.5
1965	38.9	236.8	16.4
1966	48.5	266.4	18.2
1967	62.8	290.6	21.6
1968	64.6	305.1	21.2
1969	71.5	340.7	21.0
1970	74.2	338.4	21.9
1971	81.0	N.A.	N.A.

Source: Statistics Canada, 13-203 and Unpublished Data

sold. The activities which generate and implement technological innovation are termed "research and development"; manpower and financial resources committed to research and development are the inputs and technological innovation of new or improved electronics products is the output.

It has not yet proven possible to satisfactorily measure the extent or benefits of technological innovation, that is, the value of the output of R & D. Only the inputs of manpower and financial resources into research and development can be measured. As a result, the level of research and development effort cannot be directly related to the output or achievements of the entire innovative process.

Since measures of R & D effort are the only ones we have, they will be used as a proxy for innovation in the Canadian electronics industry. In doing this, we must remember that research and development effort of itself has no value; only the innovations that result have value. The analysis is valid only to the extent to which a correlation exists.

Exhibit 7, opposite, shows the growth in research and development expenditures in the Canadian electronics industry as well as in all Canadian industry during the period from 1962 to 1971. Expenditures in the electronics industry grew by a factor of 4.3 while expenditures in all industries grew by a factor of only 2.7 from 1962 to 1970. Expenditures in the electronics industry formed a continuously rising percentage of expenditures of all industries through the period from 1962 to 1967 and leveled off at around 21 to 22 per cent from 1967 to 1970. The electronics industry is now the

largest single industry in Canada with regard to research and development activity; R & D expenditures in the electronics industry comprise the vast majority of all research and development expenditures in the entire Canadian electrical industry. In 1970, research and development expenditures in the electronics industry were eight per cent of the total value of goods of own manufacture of that industry, having risen from less than four per cent in 1962. In 1971 the percentage rose still further to nearly nine per cent of the value of shipments of goods of own manufacture.

Research and development expenditures in the United States electronics industry are close to $2.5 billion per annum, approximately thirty times the level in the Canadian industry. However, as a percentage of output, they are only about two percentage points higher than the nine per cent level in the Canadian industry in 1971. On the other hand, research and development expenditures in the Japanese electronics industry, while higher in absolute terms than in Canada, are estimated to be less than five per cent of output. Does this mean that the Canadian electronics industry is less innovative than the U.S. electronics industry and more innovative than the Japanese industry? Not necessarily. As was pointed out earlier, research and development effort is a necessary, but not necessarily a sufficient condition for innovative achievement.

In addition, the product mix must be taken into consideration. Certain products, such as home entertainment products, require less innovative output in order to remain competitive than do others; for example, electronics products for aerospace applications. The Japanese

electronics industry is much more highly concentrated in the less innovative area of consumer products than are the Canadian and U.S. industries. On the other hand, the U.S. industry concentrates on the production of sophisticated systems requiring very high innovation levels to a greater extent than does the Canadian industry and to a much greater extent than does the Japanese electronics industry. Therefore, a comparison of research and development expenditures is not a comparison of innovative achievement, particularly when the need for innovation based on product mix is considered.

OWNERSHIP

Exhibit 8, overleaf, shows the percentage of the Canadian electronics industry which was foreign-controlled[5] for the years 1965 through 1970. The exhibit indicates the degree of foreign control in terms of four measures: number of corporations, total assets, total sales, and profits. All of these measures indicate a rise in the degree of foreign ownership during the period. They illustrate very clearly that the corporations which are greater than 50 per cent owned by non-residents tend to be larger and much more profitable than those owned by Canadians in the industry.

The lowest percentages are found when foreign ownership is measured by number of corporations and the highest percentages in foreign ownership are found when it is measured by profits. The percentages as

5. In this study we have defined a foreign-controlled company as one in which more than 50 per cent of the common stock is held by foreign residents, private or corporate.

EXHIBIT 8

CANADIAN ELECTRONICS INDUSTRY - OWNERSHIP

Year	Number of Corporations			Assets		
	Total	> 50% Non-Resident	% > 50% Non-Resident	Total ($ millions)	> 50% Non-Resident ($ millions)	% > 50% Non-Resident
1965	180	36	20.0	502	164	32.7
1966	197	42	21.3	685	268	39.1
1967	167	50	29.9	753	313	41.6
1968	173	52	30.1	837	337	40.3
1969	189	57	30.2	972	387	39.8
1970	185	64	34.6	1,078	485	45.0

Year	Sales			Profits		
	Total ($ millions)	> 50% Non-Resident ($ millions)	% > 50% Non-Resident	Total ($ millions)	> 50% Non-Resident ($ millions)	% > 50% Non-Resident
1965	810	266	32.8	43.8	22.6	51.6
1966	994	389	39.1	50.8	27.6	54.3
1967	1,100	462	42.0	38.7	26.7	69.0
1968	1,209	492	40.7	54.8	36.2	66.1
1969	1,313	542	41.3	63.6	39.7	62.4
1970	1,421	622	43.8	24.4	23.6	96.7

Source: CALURA, Statistics on SIC codes 334 and 335 (1968-1970 from unpublished data)

measured by assets and sales are about equal and fall between the two extremes.

The fact that the percentage of foreign ownership as measured by assets and sales is greater than the percentage as measured by number of corporations is indicative of the tendency for foreign-controlled firms to be larger than Canadian-controlled firms on the average. In fact, of the 20 or so largest companies in the industry, which together account for approximately three quarters of the total output, only four, (CAE industries, Electrohome, Leigh Instruments, and Northern Electric), are Canadian-controlled.

If just one of these, Northern Electric, were removed from the data, the percentage of foreign ownership as measured by assets and sales would rise considerably in relation to the percentage of foreign ownership as measured by number of corporations. Excluding this one firm, which accounts for approximately one third of the total employment in the industry, and which is far larger than any other Canadian company in the industry, Canadian-controlled or foreign-controlled, would thus reveal an even greater relative size of foreign-controlled versus Canadian-controlled firms.

The percentage of profits earned by foreign-controlled firms is considerably higher than the percentage of sales or assets of firms which are foreign-controlled. The apparently higher profitability of foreign-controlled firms could be due to a number of factors. Among them might be the larger average size of foreign-controlled firms, the

particular products and markets of foreign- versus Canadian-controlled firms, the fact that in some instances foreign-controlled firms may not pay the full cost of imported technology but rather show this advantage in net profits, and the possible difficulty of separating out the profits from the electronics segment of companies (that tend to be foreign-controlled) which are engaged in a wide variety of activities.

These last two points, coupled with the fact that, when royalties are paid they may be based on sales or output, may explain the very large jump in the proportion of profits earned by foreign-controlled corporations in 1970 which was a poor profit year for the industry as a whole. If a foreign-controlled company is paying royalties on the basis of sales, and sales decline, then royalty payments decline, but a Canadian-controlled company may find its expenditures on research and development relatively fixed. Instead of declining with sales, these might cut deeply into profits in a year of low sales.

The fact that almost 97 per cent of the profits in the electronics industry in 1970 were earned by foreign-controlled firms may be somewhat misleading. Several significant Canadian-controlled companies had reduced but appreciable profits in that year. The apparently insignificant net profit level of Canadian-controlled companies is due to the fact that some Canadian-controlled companies suffered substantial losses in 1970.

Although foreign-controlled companies now account for somewhat less than one half of the total output of the Canadian electronics industry and although the percentage has been growing in recent years, the degree

of foreign ownership in this industry is still well below that in many other high technology Canadian industries (e.g. oil and chemicals). Furthermore, in 1970 foreign-controlled companies accounted for over 63 per cent of the output of the entire Canadian electrical industry. Since electronics accounts for over 40 per cent of the total electrical industry output and since the foreign-controlled portion of this segment of the electrical industry is less than 44 per cent of output, approximately three quarters of the output of the remainder of the electrical industry is produced by foreign-controlled firms.

Foreign involvement in the Canadian electronics industry developed in a number of ways. Firstly, the manufacture of electronics products was undertaken by previously established foreign-controlled electrical manufacturers who had entered Canada early in the century and before to serve the Canadian market and avoid tariff barriers. Secondly, foreign-controlled companies have been acquiring small Canadian manufacturers. Thirdly, a number of foreign electronics manufacturers established Canadian subsidiaries in order to supply the Canadian government's defence procurements in the period following the Second World War.

The fact that well over one half of the industry is still Canadian-controlled is due substantially to three factors:

1. Unlike many other industries, in the electronics industry it is possible for large numbers of companies to be established and grow without coming into substantial direct competition with other firms in the industry, although they do usually have to face competition from abroad. This is due primarily to the wide diversity of products and the innovative nature of the industry.

2. Through its aid to research and development, its trade missions, its purchases of electronics products and other means, the Federal government has given substantial support to the industry. Some of the firms which have been helped to remain competitive and profitable are Canadian-controlled.

3. Until 1956, the Western Electric Company of the United States held 43 per cent of the stock of Northern Electric. In that year a United States anti-trust consent decree caused Western Electric to divest itself of its holdings in Northern Electric. This decree, by a body outside Canada, ensured that control of Northern Electric would be in Canadian hands. In fact it is now a wholly owned subsidiary of Bell Canada whose stock is almost all held by Canadians.

While foreign control of the electronics industry as a whole is under 50 per cent as measured by sales, foreign-controlled companies dominate the home entertainment segment of the industry. Only one Canadian-controlled company remains a significant factor in this market. As a result, over 80 per cent of this segment of the electronics industry is foreign-controlled. On the other hand, telephone and telegraph apparatus production is almost wholly Canadian-controlled, this segment of the industry being dominated by Northern Electric.

The reason for the high level of Canadian control of telephone and telegraph equipment manufacture has already been stated. Foreign control of the home entertainment segment of the industry is high because there have been a large number of foreign manufacturers with designs and production techniques available who either already had subsidiaries manufacturing other electrical products in Canada or saw an opportunity to set up subsidiaries to exploit the large Canadian market for home

entertainment products. It should be remembered that, aside from the U.S. market which has always been much larger, the Canadian market was, until recently, greater than or close to the size of the market in every other country of the world.

It has been difficult for most Canadian-controlled companies to get established or remain competitive in the manufacture of home entertainment products because of the greater engineering and management experience which foreign-controlled firms have available and because of scale economies in the manufacture of these products. A subsidiary of a foreign manufacturer which has only a small share of the market and therefore cannot achieve the scale economies of its competitors may choose to operate at a loss for a long period of time in the hope that it can eventually build a larger market; the typical independent Canadian entrepreneur does not have the financial backing to enable him to make this choice. It is also possible that subsidiaries can achieve lower unit costs at lower volume than can Canadian-controlled firms due to factors such as the spreading of R & D , tooling, and engineering expenses over the total volume of parent and subsidiary and lower material and component costs through the bulk buying of the parent. In this way, subsidiaries may be able to avoid some of the scale diseconomies that an independent operation would face and thus avoid significant losses. At higher volumes, this unit cost advantage diminishes or disappears.

Foreign involvement in the remainder of the electronics industry is due, in part, to the Canadian Government's defence procurements in

the 1950's. Foreign firms were apparently more ready and able to establish subsidiaries in Canada to meet the Government's defence needs than were Canadian entrepreneurs. A number of electronics firms were established in the 1950's and most of these concentrate on the manufacture of electronics systems. In the 1950's much of the market for these systems was provided by defence procurement. At least three of the largest foreign-controlled companies in the industry were established between 1953 and 1956 by U.S. organizations. This situation points up the importance of government purchasing in encouraging the setting up and/or expansion of firms in industries of this type.

III - BEHAVIOUR

The behavioural characteristics of Canadian- and foreign-controlled companies in the electronics industry were assessed through analysis of statistical questionnaires and interviews with executives of four sample companies supplemented by certain behavioural information obtained from interviews, business services, and other sources on many other companies in the industry.

Because of the wide diversity of product lines and applications for its products which characterize the industry, there is a diversity of companies operating in the electronics industry which is not parallelled in most other industries. As a result, there are marked behavioural differences amongst the companies. Since we are ultimately seeking to ascertain differences in behaviour which are attributable to ownership, great care must be exercised to separate out differences which are due to other causes from those differences in behaviour which are primarily the result of ownership. For example, foreign control of the consumer products segment of the industry is higher than in other segments of the industry and the consumer products segment does less research and development and exports less than do these other segments. Are we to conclude from this alone that foreign control leads to lower exports and research and development activity? Obviously not, such a conclusion being similar to concluding that research and development activity in the chemical industry is greater than it is in the manufacture of furniture products because the chemical industry is dominated by foreign-controlled companies.

The behaviour of companies in the electronics industry was assessed from a number of points of view which are discussed in turn below. As is the case for the other five industries studied, the identity of sampled firms is kept confidential. Because of the diverse characteristics of firms operating in the electronics industry and the uniqueness of individual companies' operations, the preservation of confidentiality precludes us from providing more than a very general outline of the sampled firms' characteristics. Furthermore, we have not been able to provide detailed reasons why certain observed behavioural differences should be attributed to causes other than ownership because this too would risk disclosure of identities.

The sampled companies had electronics sales in the $1 million to $100 million range. With one exception, a significant proportion of the total output of these companies involved products other than electronics products. In some cases these other products were mostly electrical, in others they were not. In addition to the sampled companies, executives of firms with electronics sales outside the above range, both higher and lower, were interviewed.

The sampled companies produce a wide variety of electronics products for the Canadian and foreign markets. Product lines include home entertainment equipment, communications products, display devices, and measurement equipment.

PRODUCT LINES AND MARKETS

Although the products of the electronics industry are so diverse that no single company produces a significant proportion of the total, some companies manufacture a much broader range of products than do others. Company size would appear to be the primary determinant of the breadth of product line although exceptions can be found. It would appear though that, considering companies of roughly equivalent size, foreign-controlled firms tend to have a broader product line than do Canadian-controlled companies. This may, in part, be attributable to the availability of the technological developments of the parent organization and to a desire on the part of the parent to use its subsidiary as a means of gaining exposure in Canada to its own product line. For example, some foreign-controlled companies concentrate heavily on both consumer products and sophisticated electronics systems; this is not true of any Canadian-controlled company.

While product line is the key determinant of markets served, both by type of customer and location, the causality appears to work in both directions. In an industry with rapidly changing technology, such as electronics, a company serving particular markets through its existing product line may see a need for, and develop, new products to serve this market and it may also seek new applications for its existing products and variations of them.

EXPORTS

The export performance of companies in the electronics industry

is primarily determined by product line. Both foreign- and Canadian-controlled companies are engaged in the manufacture of products with high export potential on the one hand and low export potential on the other, although there is a tendency, as previously mentioned, for foreign control of the consumer products segment, which has low export potential, to be greater than the average level of foreign control throughout the industry.

The predominance of foreign control in the consumer products segment, however, is not due to the fact that the export potential for these products is limited. Nor is the limited export potential due to the predominance of foreign-controlled companies. Rather, exports of Canadian produced consumer products are limited primarily by competitive factors including scale and wage rates. U.S. and Japanese producers are larger; they serve considerably larger domestic markets and the Japanese industry serves a large export market in consumer products. Also, much of the international trade in consumer products originates from countries, particularly in the Far East, with wage levels substantially lower than those prevailing in Canada.

On the other hand, the manufacture of sophisticated systems for industry and government is not so dependent on either scale or wage rates. As a result, Canadian producers of these products have been able to make significant in-roads into the world market. Part of the reason they have done this is necessity. Because of the high research and development effort involved and the limited size of the Canadian market, they have

to seek export markets in order to maintain profitability and to build a base for further product development.

Exports as a percentage of total production varied from a few per cent to more than two thirds among the sample companies. When the influence of product line was accounted for, however, no significant difference due to ownership was discernible. Although we were not able to measure a difference in the export performance of foreign-controlled versus Canadian-controlled companies in the electronics industry, two findings which might bear on export performance should be noted:

1. In general, foreign-controlled companies try to avoid competition with their parent organizations or other subsidiaries of the parent. As a result, their product lines tend to consist of those products with limited Canadian export potential or those which the parent organization or its other subsidiaries are not concentrating on. In some cases, the world market for particular products is assigned to the Canadian operation.

2. Canadian-controlled companies sometimes use means to expand foreign sales which foreign-controlled companies do not use. For example, to our knowledge there is no foreign-controlled company in the Canadian electronics industry which has established subsidiaries of its own abroad. On the other hand, several Canadian-controlled manufacturers have established subsidiaries in foreign countries to enable them to capture a larger share of the markets in these countries.

Thus, while our limited evidence indicates that the export performance of foreign-controlled companies may be comparable with that of Canadian-controlled companies in the industry and that some foreign-controlled companies certainly perform very well indeed in this regard, there are influences at work which could be inhibiting the foreign sales of the Canadian industry.

IMPORTS

Among the four sampled companies, there was no evidence that the extent of imports of either finished products or components and materials was in any way a function of ownership; there appeared to be complete autonomy as to the selection of sources of supply. The importation of finished products for resale was a relatively small portion of total sales in all cases. In the case of two firms, one Canadian-controlled and one foreign-controlled, the importation of components and materials was a very small proportion of total purchases of components and materials; in the case of the other two companies, again one foreign-controlled and one Canadian-controlled, imported components amounted to a significant proportion but still much less than half of total components purchases. The explanation for the variation again is most likely to be found in the differences in products being manufactured, the technologies upon which they are based, and the availability in Canada of the particular components involved.

However, there is evidence that some foreign-controlled companies in the industry, which were not included in the sample, have a tendency to use large quantities of imported components and sub-assemblies. We are not aware of the true reasons underlying this apparently high propensity to import. It may be due to the designs not having been adapted to be able to use Canadian components, to policies of the parent organization, to the fact that their scale does not permit economical production of sub-assemblies, or to a competitive advantage of foreign producers for the components and sub-assemblies they require.

Regarding the possibility of a competitive advantage for foreign suppliers, it should be recognized that when a foreign-controlled company produces a product designed by the parent, the suppliers of the parent and the parent company itself have some advantage over alternative potential suppliers to the Canadian operation. This stems from their involvement from the time the product was being developed, which gives them the opportunity to have components ready at the time they are needed by the end product producers. When basic design is carried out by the parent, the suppliers that will be involved during the development stage will tend to be those who were already doing business with the parent and these will, in turn, tend to be in the country of the parent. The fact that some foreign-controlled companies, such as those in our sample, do not appear to import more than Canadian-controlled companies can be attributed to several factors. Among these are import duties, the manufacture of products different from those of the parent, and redesign of products to make better use of domestic components. However, the subsidiary must have sufficient volume to make redesign worthwhile.

CAPITAL EXPENDITURES

There was no evidence of a relationship between the proportion of capital equipment acquired abroad and ownership. However, for the sampled companies the proportion of capital equipment purchased abroad ranged as high as 30 per cent, almost all of it obtained in the U.S. It is important to point out here that the electronics industry is comparatively labour-intensive and therefore that capital equipment sourcing

EXHIBIT 9

ADVERTISING AGENCIES USED BY SELECTED
NATIONAL ADVERTISERS OF HOME ENTERTAINMENT PRODUCTS

Country of Control of National Advertisers	Country of Control of Agency Used in Canada
Europe	United States
Canada	Canada
United States	United States (Common Account)*
United States	Canada
United States	Canada
United States	Canada
United States	United States (Common Account)*
United States	Canada
United States	Account handled directly by advertiser
United States	Canada
Japan	Canada
Japan	Canada
Japan	Canada
Japan	Canada

* Common account refers to an account being served by the same advertising agency in Canada as in the U.S. i.e. the foreign-controlled agency in Canada has often been able to acquire the account because its parent was serving the parent advertiser in the U.S.

Sources: Standard Advertising Registry, 1973
National List of Advertisers, 1973

Kates, Peat, Marwick & Co.

is not as important a consideration in assessing behaviour as it is in certain other industries such as mining and pulp and paper. Capital equipment purchases usually range around one or two per cent of sales, considerably less than expenditure on research and development.

ENGINEERING AND
DESIGN SERVICES

The employment of outside engineering and design services among the sample companies was minimal.

ADVERTISING SERVICES

Advertising is a significant factor only in the home entertainment segment of the industry which, in Canada, primarily involves the manufacture of television sets. Exhibit 9, opposite, lists the country of control of advertising agencies opposite the country of control of most of the manufacturers supplying the television market in Canada. There are only three cases in which foreign-controlled agencies are used and in one of these the supplier does not manufacture in Canada.

Use of Canadian-controlled agencies by foreign-controlled companies in the home entertainment segment of the electronics industry is higher than in other consumer oriented industries. In the two cases where a common account is involved as well as the one in which no agency is used it seems probable that purchasing of advertising services decisions have been influenced by existing head office arrangements. There could

also be some use by all U.S. manufacturers of the advertising material (e.g. TV commercials) prepared in the U.S. and used directly or adapted and used on Canadian media.

VALUE ADDED IN
RELATION TO GROSS SALES

Value added as a percentage of sales identifies the extent to which a company's own manufacturing and other activities are contained in the products it sells. Product characteristics and the degree of vertical integration affect the value added percentage of a particular operation. The value added percentages of total sales for the sampled companies were, on average considerably higher than the respective averages for radio and TV manufacturers and communications equipment manufacturers noted in Exhibit 5 of Section II. Therefore, although we were unable to establish a relationship between the percentage of value added and ownership for the selected sample of companies, it is clear that our sample was not typical of the industry. It is possible that a relationship between percentage of value added and ownership could be established using a much larger sample of companies. Such an analysis would compare Canadian- and foreign-controlled companies in similar product line groupings.

LAYOFFS

All companies sampled followed a practice of significant lay-offs of production workers in times of declining sales. The industry employs large numbers of relatively unskilled personnel who are let go

during periods of decline. Year to year declines in total employment as high as 30 per cent were recorded by the sample companies. This characteristic is not confined to any particular segment of the industry and there is no evidence of a relationship between the practice of layoff and ownership.

COMMUNITY INVOLVEMENT

There were marked differences between the degree of community involvement amongst the sample companies. Some had a policy of encouraging community involvement on the part of their executives, others supported community involvement if it arose spontaneously on the part of a particular executive, and still others did not consider the subject an important issue. The emphasis on community involvement did not appear to be strongly related to ownership; however, there was a slight tendency for foreign-controlled companies to be more cognizant of the subject. The main reason for the large variation of community involvement is the location of the companies' activities; the larger the community, particularly in relation to company size, the lower the emphasis on community involvement.

RESEARCH AND DEVELOPMENT ACTIVITY

The extent of research and development activities undertaken by the sampled companies varied considerably. Expressed as a percentage of sales, research and development expenditures ranged from about one per cent to in excess of eight per cent. There were two companies at the higher end of the range and two at the lower end. One of the companies

at the higher end of the range was foreign-controlled, the other was Canadian-controlled; the same split of ownership occurred with regard to the two observations of lower research and development activity.

It is very difficult to be sure of the reasons for this variation. Much of it is due to differences in product line and markets served. Although the relatively low research and development effort of one foreign-controlled company is difficult to explain entirely on the basis of product line, the evidence from the sampled companies does not permit a clear conclusion on the effects of ownership on research and development activity. However, along with information gained on other companies in the industry, it does permit two observations to be made:

1. In many instances foreign-controlled companies in the electronics industry carry on major research and development efforts aimed at producing innovative outputs. It must therefore be concluded that foreign control does not necessarily lead to a low level of research and development activity.

2. In other instances foreign-controlled companies have very limited research and development programs. These programs are often aimed at adapting the products developed by the parent for a more limited scale of production in Canada. In these circumstances, the research and development effort rarely leads to innovative outputs of a type which would make their products competitive in the world market.

The validity of these two observations is evidenced by the existence of companies of both types. In fact, one example was found

of a company operating in one way for a segment of its product line and in the other for the remainder of its products.

There is additional evidence that foreign control can act to retard the innovative outputs of Canadian subsidiary companies. According to some of our interviewees as well as a report prepared for the Committee on Finance of the U.S. Senate,[6] multinational companies try to avoid duplication of research and development activity because of the high cost involved. There is a tendency to concentrate research and development activity in the home country where the majority of scientific and engineering staff are employed. In those instances where multinational companies have laboratories abroad, these tend to do development work, the basic research being centralized in the headquarters of the parent. Numerous reasons are cited for this including:→

- the ease of communication when work is carried out in one place

- the feeling that R & D professionals work better when there is an aura of success within the group. This feeling of success is more easily provided within a large organization working on many projects since there is a greater chance that some of them will be successful.

- a successful development on the part of a subsidiary organization may require a difficult decision as to where further work on the development should be carried out. From the point of view of the overall organization it may be better to conduct further development, production testing and market testing in some other country, particularly in the home country. On the other hand a decision to follow this route may not be taken well by the research and management staff of the subsidiary. It may lead to resignations or reduced efficacy of effort in the future.

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6. Implications of Multinational Firms for World Trade and Investment and for U.S. Trade and Labour, February 1973.

Considerable corroboration of this tendency to centralize R & D was found during our investigation of the Canadian industry. The Canadian subsidiary often is required to justify the mounting of a major effort to develop its own idea. To some extent, financial assistance for research and development provided by the Federal government permits Canadian subsidiaries to counteract the tendency for centralization in the parent organization because the direct costs to the company are reduced. In fact, one might pose the proposition that such assistance is a major contributing factor to the relatively high R & D effort of some foreign-controlled companies in Canada.

Many foreign-controlled and Canadian-controlled companies make considerable use of government grants for R & D. All of the sample companies did; often government funds covered more than 25 per cent of total R & D expenditures.

The availability of financial assistance does not always counteract the tendency for centralization. The requirement in these programs that control of the development remain in Canadian hands often prohibits the acceptance of such assistance. The parent may opt to retain the freedom to produce the product wherever it may choose, particularly when the product has a significant market potential in the home country. In addition, much of the output of foreign-controlled companies involves products developed and designed by the parent for sale in the home market. It is natural for these companies to capitalize on the Canadian market through their subsidiaries and it would make no sense to duplicate the development

in Canada. Production of the parent's products by a subsidiary permits the capture of greater profits through the achievement of a wider market. Yet it delays the diffusion of the technology to the proprietary ownership of foreigners which would be more rapid in the case of a direct transfer to an unrelated firm under a licensing agreement.

The case of Northern Electric is a good illustration of how innovation on the part of a subsidiary company can often be retarded through ready access to the technological developments of the parent. Although not truly a subsidiary of Western Electric, because Western held less than 50 per cent of its stock, until 1956 Northern Electric relied on technological developments from Western Electric. Because of the U.S. anti-trust decree in 1956, Northern was put in a position of gradually having to develop increasing amounts of its own technology.

The results have been very significant indeed. In 1960, about 90 per cent of Northern's designs originated from a foreign source; by 1970, foreign designs accounted for only about 1 per cent of the overall total. During the same period the in-house designs of Northern Electric rose from 5 per cent to about 80 per cent. In 1961, the professional R&D staff of Northern Electric consisted of 60 at the Bachelor level, 19 Masters and four Ph.D.'s; by 1969, these figures had risen to 540 Bachelors, 135 Masters and 52 Ph.D.'s.

The change in the export performance of Northern Electric has been very dramatic. In 1963, exports accounted for a mere 2.5 per cent of sales; by 1970, this had grown to almost 18 per cent. In addition,

Northern has recently established subsidiary operations in foreign countries for the purpose of enhancing its market potential abroad. It will be recalled that in Section II of this report the telephone and telegraph apparatus segment of the Canadian electronics industry displayed higher growth in exports and lower growth in imports during the past decade than did any other segment of the industry.

In 1958, 62 per cent of the sophisticated components used in Northern's products came from Canadian sources; by 1968 this had climbed to 85 per cent, illustrating the point made earlier, that use of imported designs gives advantages to foreign suppliers. The switch to development of new or improved products in Canada has led to the decrease in the use of imported components.

While this illustration of the transformation of Northern Electric may be termed an unique example, it does demonstrate the fact that reliance on foreign technology can act to limit innovation in Canada and can increase the use of foreign sources of supply. Even though many foreign-controlled companies are engaged in significant research and development activities in Canada in contrast to Northern Electric prior to 1956, one might ask whether research and development activity would be even greater if access to the technological developments of parent organizations were reduced and/or delayed through a change in ownership. It might be argued that a reduction in the importation of technology would lead to greater imports of finished products, but the Northern Electric example at least suggests that it could lead to more product innovation in Canada.

HIRING POLICY AND NON-CANADIANS IN UPPER MANAGEMENT POSITIONS AND ON BOARDS OF DIRECTORS

None of the sample companies had a specific hire Canadian policy, although one Canadian-controlled company said that there was no need to hire abroad because sufficient executive talent exists in Canada to meet its requirements. All of the companies indicated that, when there was a need to fill a position, they first look within Canada primarily because of cost. In addition, it was suggested by some executives of Canadian-controlled firms that the opportunity to work within a Canadian-controlled company was not an insignificant factor in attracting candidates for executive positions.

As might be expected, the boards of directors of the foreign-controlled companies had foreign residents in their membership although these were always in a minority. Membership of the boards of directors of the Canadian-controlled companies was entirely Canadian. However, it should be pointed out that, although majority membership on the board of a foreign-controlled company may be Canadian, control of the board rests with those members who represent the parent organization.

All of the chief executive officers of the four companies studied were Canadian citizens. In addition, while two senior executives of one of the foreign-controlled companies had originally come from the parent, both had been with the Canadian organization for a long time and one was a Canadian citizen. All of the senior executives of the other foreign-controlled company were Canadian citizens and none had come from the parent company.

Thus, from the sampled companies, there was no evidence of a significant interchange of senior staff between parent and subsidiary. However, there are instances in the industry in which not only the president but many of the other senior executives have come from the parent organization and may be expected to return to the parent in the future. It is possible that the behavioural characteristics of the particular foreign-controlled companies in our sample result, in part, from the fact that the chief executive officers of these companies were Canadian citizens and were interested in keeping their operations as autonomous as possible. The fact that they were Canadian citizens may also be evidence of an attitude on the part of the particular parents towards their subsidiaries. One might ask whether our limited ability to establish relationships between ownership and behaviour (in the categories of behaviour already discussed) is to some extent related to the "Canadian content" of the executives of the sampled foreign-controlled companies.

Taking the industry as a whole, there is no doubt that foreign-controlled companies in general have a greater tendency to use foreign executive than do Canadian-controlled companies. This clearly limits the opportunity for Canadian staff to take on senior executive responsibility in Canada. It may also affect the Canadianism of outlook of those foreign-controlled companies which make significant use of foreign nationals among their executives. Against these real and possible disadvantages to Canada, must be set the possible advantage to the efficiency of the Canadian industry of having the opportunity to draw upon the experienced talent of much larger parent operations. Also, the link with a large international organization may provide Canadian executives a convenient opportunity

to expand their experience by working abroad for a period of time with the parent or one of its other subsidiaries.

CONTROL AND AUTONOMY

In this area there are clear differences between Canadian-controlled and foreign-controlled companies. There are instances in which foreign-controlled companies have almost complete autonomy of decision making except where major expansion or diversification is involved. However, these situations are the exception rather than the rule, and furthermore, according to the executives involved, continuance of this state of affairs, where it now exists, appears to depend upon the maintenance of a reasonable profit position. With the ever-present proviso that profitability be maintained, foreign-controlled companies have varying degrees of autonomy ranging from very little to the extreme mentioned previously.

However, it is common for the subsidiary to have full or nearly full control over such areas as purchasing and choice of suppliers, production planning, marketing strategy and approach, and labour negotiations in addition to the conduct of all aspects of day-to-day operations.

The contention by executives of foreign-controlled firms that they have autonomy or near autonomy in labour negotiation was largely confirmed by union representatives knowledgeable about the electronics industry. These union representatives suggested that foreign-controlled firms appear to have increased their authority over bargaining in recent years. Previously, it was the union representatives' impression that most contract conditions had to be cleared by corporate headquarters outside Canada, and that agreements generally followed U.S. patterns. Recent

experience indicates that major foreign-controlled companies in the electronics industry have achieved greater independence to adopt positions within the context of the Canadian economic and labour situation.

Generally, plans for major expansion or diversification are subject to the approval of the parent. In addition, the parent controls operating plans through budgetary review at least once a year. Control over product line is exercised by the parent through the requirement that certain products of its own be manufactured in Canada as well as through its final say on diversification plans. The scope of research and development activity is controlled through reporting to avoid duplication of effort and to locate projects where they can be carried out to greatest corporate advantage. Parent organizations exercise some control over export markets as well through control of product line and through coordination of foreign marketing activity to avoid situations in which two or more firms from the same organization compete for the same customer.

Although considerable autonomy still exists amongst many foreign-controlled companies in the electronics industry, control is exercised by the parent over the key strategic areas which effect the scope of the business. Furthermore, there is a trend in large multinational companies, particularly those with head offices in the United States, toward more and more integration of the entire world-wide operation. This tread was identified by executives of some U.S.-controlled companies as being prevalent in many multinationals including their own. Subsidiaries are becoming increasingly subject to the close scrutiny of

the parent organization through dotted line relationships between similar functions for the purpose of ensuring consultation and coordination. This could be advantageous to the Canadian operation and to Canada to the extent that such coordination and advice leads to the avoidance of potentially disasterous programs. However, the time taken for review of plans and for the ensuing discussions if there are disagreements might result in a delay sufficient to reduce the efficacy of these plans. More coordination may also result in a reduction in the scope of the activities of the Canadian operation, the parent company choosing to carry on the development elsewhere even though it could have been profitable in Canada because the profit potential is judged to be slightly greater in another location.

With the exception of the recent downturn from 1969 to 1971 and the difficulty being experienced by the components segment of the industry, the post war period has been one of high growth and reasonable profitability for the Canadian electronics industry. In spite of this, as noted above, there is emerging a trend toward a reduction in the autonomy of many subsidiaries. One can only speculate as to the extent of autonomy that may be lost should the industry fall upon a long period of hard times and on the effect of such a loss of autonomy on the behaviour of foreign-controlled companies. The point is that the potential for the exercise of greater control over decision making, and even for the moving in of an entirely new group of senior executives from the parent, exists. In addition there is the potential danger of governments or central banks in the home countries of the parents taking steps to abruptly alter the

funds available to a subsidiary even to the extent of reducing the earnings retention of the subsidiary against the wishes of the subsidiary and its parent.

IV - ATTITUDES

The attitudes of senior executives in the four companies studied, as well as of senior executives in other companies, regarding a number of issues were obtained during the interviews. From these interviews, we were able to form a composite set of views as to the general position of the electronics industry in Canada. This is described below, along with the attitudes expressed by industry executives.

COMPETITIVENESS, SPECIALIZATION AND RATIONALIZATION

It is the view of many executives in the industry as well as of a number of government officials that large segments of the Canadian electronics industry are in a comparatively unfavourable competitive position. Looking first at home entertainment products, particularly the manufacture of home television receivers which is still large in Canada, it has been pointed out that there are seven times as many people per manufacturer in the United States as there are in Canada. The greater economies of scale thereby obtainable in the United States considerably reduce the unit prices. This is particularly true since the relatively heavy research and development and marketing expenditures required in this industry can be spread over more units of output. Our wage rates in Canada are not significantly lower than those in the United States, in fact, in some cases they tend to be higher because

some parts of the Canadian industry are located in relatively high wage areas of the country whereas a larger proportion of the United States industry is located in comparatively low wage areas.

The home entertainment segment of the industry is already fragmented, primarily in the hands of foreign-controlled companies, and has not demonstrated a capability of competing in the world market. Yet, in the past two years, three new foreign manufacturers of television receivers have established subsidiaries in Canada. One of these is U.S.-owned and the other two are Japanese-owned. The Japanese-controlled companies are merely assembling sets with chassis imported from Japan. One of these Japanese companies has been given assistance by the Federal Government to establish itself in Canada through a DREE grant of $227,000.

Another industry fact of life described by industry executives is that Canadian component manufacturing is under very severe competitive pressure and is declining. Here again scale is the important factor; it is even more important than for home entertainment products because research and development expenditures in this area need to be greater. There is only one vacuum tube manufacturing facility remaining in Canada and it continues to be competitive primarily due to the fact that it is located in a low wage rate area, wages being approximately one-third lower than in Southern Ontario.

In the area of electronic systems for industry and government, the Canadian industry is somewhat more competitive, principally due to

government assistance for research and development and to concentration on special purpose products which, by their nature, do not have markets which can give rise to long production runs. However, this segment of the industry depends on export sales for its viability because the Canadian market for such products is not large, and the ability of the Canadian industry to achieve export sales in this area is restricted by tariffs, the purchasing policies of foreign governments and other non-tariff barriers.

The Canadian electronics industry recognizes that it must specialize and rationalize in order to survive. Many companies are in the process of reducing their number of product lines and concentrating on those products which have brought them success in the recent past. They are also concentrating their research and development activities to further develop and refine these products and to capitalize on market opportunities which the sale of these products has opened up.

Yet the Canadian electronics industry as a whole still manufactures a very broad product line when the size of the industry and the size of its market are taken into consideration. One might conclude that this breadth of product line may be due, in part, to the number of foreign-controlled subsidiaries operating in the country with ready access to the technology of their parent organizations. It may also partly be due to the lack of a government strategy to focus the endeavours of the industry. Many observers contend that no country, not even the United States, can develop all the technology it needs. Rather, each nation must decide

where to concentrate its own limited science and technology resources and how best to secure and apply the technologies it cannot effectively develop itself. It is the adoption of this point of view that has apparently characterized the selective economic/technical strategies of countries as diverse as Japan, Sweden and Israel.

FREE TRADE

It is the view of executives in the industry that the manufacture of home entertainment products in Canada would likely cease if the present tariffs were reduced significantly. This is primarily due to the relatively lower prices of television sets produced in the United States. On the other hand, there seems to be a general concensus that a move to freer trade would be helpful to the manufacturers of electronic systems for industry and government. This is primarily because such a move would further open up export markets upon which this segment of the industry is already so heavily dependent, yet foreign products are permitted easy access to the Canadian market. Some in the industry expressed the view that newly developed Canadian products are frequently more competitive abroad than they are in Canada because "Canadians are reluctant to buy new developments with a 'Made in Canada' label unless they have previously been accepted abroad". If this view is valid it could be very important since most industrial and government electronic systems are new developments.

GOVERNMENT SUPPORT AND INVOLVEMENT

The electronics industry relies very heavily on government support. All segments of the industry rely on government grants for their research and development activities. As was mentioned in the previous section, government assistance for R&D has enabled many foreign-controlled companies to carry out research and development activities which otherwise might have been pursued by the parent or not at all. It has also enabled many Canadian-controlled companies to develop new and more sophisticated products and thereby expand their markets both at home and abroad. However, the selection process, wherein the government chooses to support some projects and not others, is not yet considered sufficiently sensitive to give adequate weight to potential long term beneficial effects of future projects which might follow on from the specific project in question. The selection criteria appear to favour relatively low risk projects, and both the selection criteria and the information requirements appear to be such that large companies may tend to have an advantage over small companies. In addition, some contend that the obviously desirable condition that the project be exploited in Canada has worked to deny aid in cases where production must take place in a subsidiary abroad in order to secure a foreign market.

Many within and close to the industry contend that the various government assistant programs are not always well coordinated. The Department of Industry, Trade and Commerce considers that the industry, particularly the home entertainment segment of it, is too fragmented.

Yet, as was mentioned previously, the Department of Regional and Economic Expansion assisted a new foreign television manufacturer to establish itself in Canada.

The home entertainment segment relies on the maintenance of the current tariff barrier although its efficacy appears to be declining. Imports of television sets have been increasing despite the tariff. This applies not only to imports from the Far East but also to those from the United States. Other segments of the industry rely on government purchases and upon trade missions with, in some cases, ministerial intervention to achieve export sales.

In view of the stiff competition faced by the industry from abroad, many executives would like to see more government support. On the other hand, they fear the increased paperwork burden which such support may involve. One area for increased support that was mentioned was government assistance for industrial engineering, rationalization, and other approaches to increase manufacturing efficiency.

Probably the most important way in which the government could help the industry and at the same time avoid the problem of increased paperwork would be the adoption of a "buy Canadian policy". It is felt by many of those interviewed that such a policy should pervade all levels of government as well as agencies and offshoots of government. Many other countries, among them the most technically advanced, have very strong policies to buy products which are developed and produced at home. The Canadian Government, on the other hand, has adopted the approach of a

rather vague requirement for Canadian content.

Students of the industry explain that "Canadian content" is not the same as "buy Canadian". A Canadian content requirement can certainly help in the provision of jobs in Canada. However, it does not necessarily lead to the innovation and research and development of the product being carried out in Canada. It is the strongly held view of many in the industry that, if the products required to meet Canadian needs were developed in Canada, the industry would enhance its innovation, production, and marketing capabilities and build on this to develop new export markets. Two points can be cited in this regard:

1. Some Canadian-owned companies had to set up subsidiaries in other countries in order to successfully compete for export sales. To receive acceptance of their products in foreign markets, these companies have had to arrange for their subsidiaries abroad, not only to manufacture the products, but also to carry out the research and development of them.

2. Examples are quoted of Canadian governments and their agencies buying a sophisticated product from a foreign manufacturer because of a price advantage without consideration of the potential beneficial side effects of having a team go through the development process in Canada. Nor does it appear that full account is taken of the economic and fiscal impact of importing as compared with buying a domestically produced product, in terms of factors such as income and income taxes foregone, welfare payments required, loss of skilled workers, and related items. Even more to the point, there have been situations in which governments or their agencies have decided to obtain a product of foreign manufacture without giving the Canadian industry an opportunity to submit a proposal. This is in marked contrast with certain foreign governments which hold briefing sessions with the industry to advise them of the nature of likely future needs long in advance of the actual tendering process.

> To illustrate this point let us consider the SAMSON Project. More than ten years ago, the Department of National Defense determined that it would be necessary to modernize its message communications network. The proposed new system was termed SAMSON (Strategic Automatic Message Switching Operational Network). Although the project was in the planning stage for the last ten years, Canadian manufacturers were originally given only one month to submit alternative proposals to the system of a foreign manufacturer which the Department of National Defense favoured. Furthermore, the Department provided only limited information on the specifications of the required system. The value of this project is $50 million.

As might be expected, there was a tendency on the part of some executives of Canadian-controlled companies to prefer a "buy Canadian" policy which favoured Canadian-owned companies. Clearly this tendency was not apparent among the executives of the foreign-controlled companies.

THE CONTROL OF FOREIGN OWNERSHIP

All of the executives interviewed considered that foreign ownership, in one way or another, was a current problem in Canada, and all expressed an interest in the steps that might be taken to deal with it. Generally speaking, as might be expected, the executives of foreign-controlled companies favoured control of behaviour as opposed to ownership, particularly in the secondary manufacturing sector. In most instances, executives of Canadian-controlled companies considered that control of the expansion of foreign ownership and the stimulation of the development of Canadian-owned enterprise was more important than did the executives of foreign-controlled companies.

Some other views of executives of foreign-controlled companies were:

- that the investment of foreign capital in secondary manufacturing in Canada has been and will be beneficial and that foreign-controlled companies can carry on business as much to the advantage of Canada as can Canadian-controlled companies. The latter point is borne out by our research on the electronics industry which did identify examples of such companies

- that requiring a Canadian minority interest in foreign-controlled companies would not be of advantage to the potential Canadian shareholders. If the object is to increase Canadian ownership in the industry, it was suggested, a better way might be to encourage the formation of joint ventures between foreign-controlled and Canadian-controlled companies

- that it may be too late now to start discouraging foreign investment in the industry. This is because, in the view of some, the opportunities for investment in other countries are greater than they are in Canada. As a result, parent organizations will tend to undertake more of their future investment projects in countries other than Canada.

SOME OTHER ATTITUDES

Some other attitudes expressed were:

1. Executives of Canadian- and foreign-controlled companies contend that the industry is dependent upon the relative value of the Canadian dollar because of its dependence upon foreign trade in both directions. An example was quoted of a company dropping a product line because, it was said, the rise in the value of the Canadian dollar effectively cut off the potential for export. It was suggested that raw materials production involves fewer jobs per dollar

of output than does secondary manufacturing and therefore that some restraint on the export of raw materials would increase the potential for exports of secondary manufacturing by reducing the pressure on the Canadian dollar.

2. Executives of Canadian- and foreign-controlled companies consider that Canada should adopt a coordinated set of policies and programs to maintain and develop secondary manufacturing particularly in high technology areas. Our competitive position is relatively weak because other countries have such policies and programs and because of the comparatively small scale and fragmentation of the Canadian electronics industry.

3. Responsible Canadian companies should work toward at least partial Canadian ownership. This is in contrast with the view mentioned above that partial Canadian ownership would not be of advantage to the Canadian shareholders. Both of these views were expressed by executives of foreign-controlled companies.

4. Canadian ownership of a company could provide a competitive advantage to a company in view of the developing attitudes concerning this subject on the part of the Canadian public. This view was given by an executive of a foreign-controlled company.

5. Small Canadian-owned companies experience difficulty in obtaining funds for expansion whereas foreign subsidiaries can draw on the resources and credit rating of their parent organizations. Although some executives of larger Canadian-owned companies did not admit a disadvantage in this regard, it is clear that the resources of the parent are not ignored even when large foreign-controlled firms seek funds. Dun and Bradstreet reports clearly spell out the owners of subsidiaries and often provide data on the parents' operations and on the relationships between parents and subsidiaries.

6. The industry in Canada suffers from major disadvantages relative to the industry in other countries. This view was expressed by many executives of foreign- and Canadian-controlled companies. The Canadian-controlled firms did not generally consider that they were at a disadvantage in relation to foreign-controlled Canadian competitors nor did the executives of foreign-controlled firms consider that their position was particularly advantageous.

7. The official policy of the United Electrical, Radio and Machinery Workers of America, one of the strongest unions covering employees in the electronics field, includes promoting a self-sufficient Canadian industry, and encouraging the growth of Canadian-controlled companies (as opposed to "buying back" the foreign-controlled companies). This position would seem to illustrate that the chief concern of union positions is to protect the industry in Canada, rather than alter the labour negotiation behaviour of the foreign-controlled companies.

V - CONCLUSIONS

THE INDUSTRY

The electronics industry is international with intense competition among producers all over the world. The Canadian industry has sustained growth in production and has developed export markets in the face of world competition. However, imports of electronic equipment have been growing at a slightly faster rate than exports and are currently more than twice the level of exports.

The position of much of the Canadian industry is rather unfavourable as compared with its world-wide competitors. It neither has the scale of markets such as the U.S. nor does it have the advantage of readily available raw materials which enhance the competitive position of some other Canadian industries. However, we do have the advantage of highly trained manpower and have been able to capitalize on this, in a small way, by concentrating on being leaders in certain product areas. Perhaps this talent could be focussed to produce leadership in a broader range of products with high world demand.

The industry is most competitive in the area of systems for industry and government which are technically complex and "limited sale" products. Home entertainment products and to an even greater extent components are very scale dependent. Partly as a result of limited scale, the components segment of the Canadian electronics industry is experiencing a decline and the home entertainment segment is carrying on behind a protective tariff barrier.

The competitive position of the Canadian electronics industry may be changing as a result of the recent realignments in the world's currencies and in particular devaluation of the U.S. and Canadian dollars. However, the effects on the components and large screen TV segments of the industry may be rather limited since much of the competition comes from the United States whose currency bears roughly the same relative relationship with ours as it has in the recent past.

The electronics industry is innovation and idea dependent. It has been and could be even more in the future an important contributor to Canada's ability to research, develop, design and market new products. The dependence upon innovation not only covers product development, it also covers production technology, management (particularly of innovation and research and development) and marketing (particularly of exports). A thriving electronics industry therefore offers Canadians the opportunity to be employed, develop and grow in a highly challenging environment.

The industry depends on government support in many ways. These include the maintenance of tariffs for home entertainment products, trade support for the development of export markets, assistance in undertaking costly research and development activities and, last but not least, government purchases of its products.

Prospects for growth in domestic and world-wide demand for electronics products are considerable. If we are to maintain a healthy and growing electronics industry in Canada, to capitalize on future demand growth, current support in these areas needs to continue and new ways

should be found of enhancing the ability of the industry to compete. Since we lack natural advantages, such as the market scale of the U.S., ways must be found to productively employ and give opportunity to our highly trained manpower. Perhaps one of these would be to develop an industrial strategy to coordinate and focus our industrial activity in selected product areas whose domestic demand is high and to capitalize on the expertise thereby developed to enter foreign markets.

This gives rise to the need for a coordinated and strong "buy Canadian" policy. For the electronics industry, perhaps this could be called a "develop Canadian" policy, in that it would involve a coordinated effort to research and develop as many as possible of the new and sophisticated systems that we need. Buying products manufactured in Canada which are based on imported designs is not enough. Obtaining the rights to technology developed elsewhere does not give Canadian scientists and engineers the "school of hard knocks" experience necessary to undertake the new developments that will be required in future to remain competitive in a rapidly changing technological field.

OWNERSHIP AND BEHAVIOUR

The Canadian electronics industry has a very considerable and growing foreign ownership component although it is still substantially lower than that in certain other "high technology" industries. Perhaps this is partly due to the low involvement of multinational companies in this industry in the United States compared with that in other high technology industries as well as the U.S. anti-trust decree which ensured Canadian ownership of Northern Electric.

It is very difficult to discern behavioural differences in most respects between Canadian- and foreign-controlled companies in the electronics industry because of wide variations in the nature of business that each company is engaged in. As a result, many types of behavioural difference cannot be directly attributed to ownership. Some behavioural differences which did come to light, either among the sampled companies or among other companies about which some information was gathered, include:

- The tendency of some foreign-controlled companies to use basic designs developed by the parent and to concentrate research and development activity on devising means of efficiently scaling down production runs. This tendency is particularly prevalent in the consumer products area.

- The tendency among some foreign-controlled companies to import components and sub-assemblies to a greater extent than do Canadian-controlled companies, a tendency that is due, in part, to the use of imported designs.

- The tendency of foreign-controlled companies to concentrate their development of new products in lines in which the parents show no particular interest or to have the onus of demonstrating why a product should be developed in Canada.

- The tendency of some foreign-controlled companies to obtain senior executives from their parents.

- The tendency of foreign-controlled companies to move toward more and more integration with their parents through increased liaison and head office control over decision making.

- The tendency of Canadian-controlled companies to set up subsidiaries abroad, a tendency not shown by foreign-controlled companies.

These behavioural differences, as well as the fact of foreign ownership itself, result in, or could result in, advantages and disadvantages to Canada. Production based on imported designs may result in better and less expensive products for Canadian consumers. On the other hand, it lessens the scope of activities and challenge for Canadian scientists and engineers and may limit their ability to learn through experience to stand on their own in undertaking new development projects. It also contributes to increased imports of components and sub-assemblies; manufacture to specifications developed abroad may thus be a contributing factor to the decline of the components sector of the industry.

Limitation of the scope for new product development in foreign-controlled companies reduces the opportunities for exploitation of potential market opportunities.

The practice, by foreign-controlled companies, of employing executives from parent organizations may result in greater management ability and better decision making. On the other hand, it limits the opportunity for the personal development of Canadians and for their employment in positions of responsibility and authority. The presence of foreign nationals as chief executive officers of Canadian companies may also limit the understanding and cooperation possible between government and these companies.

The existing and increasing integration of key functions within multinational companies may lead to the making of more effective

and profitable decisions. On the other hand, it limits the independence of Canadian management. As a result, time may be lost in making and implementing decisions, certain undertakings may be denied the Canadian operation, and Canadian executives may be frustrated and limited in their development potential through their inability to act without someone "looking over their shoulder".

The establishment, by Canadian-controlled companies, of subsidiaries abroad enables these companies to better take advantage of foreign market opportunities. To our knowledge no foreign-controlled company in the Canadian electronics industry has established a subsidiary abroad. The chances of one doing so seem fairly remote; should an attractive opportunity for investment outside Canada arise, it would be much more likely for the parent organization itself to establish the new operation as a direct subsidiary.

While it may be argued that the establishment of subsidiaries abroad by Canadian-owned companies reduces their contribution to the Canadian economy, there would still be some advantages, including returns on capital, research and development activity, and head office functions in Canada. If a foreign firm sets up a subsidiary in a third country, no advantage, except perhaps the possibility of importing cheaper products, accrues to Canada.

The fact of foreign ownership itself provides a source of capital to supplement domestic funds, but it is not clear to what extent such additional funds are needed or desirable. It may also speed the

introduction of new technological developments into our manufacturing processes and markets. On the other hand, the presence of foreign-controlled companies contributes to the fragmentation of the industry, particularly the home entertainment segment of it. In addition, parent organizations as well as the governments and central banks of the home countries of foreign companies with subsidiaries in Canada may take steps to limit the scope of Canadian operations.

POSSIBLE GOVERNMENT ACTION

For some time the Federal government has provided assistance for research and development in Canadian industry. This, to some extent, has counteracted some of the disadvantages of foreign control in the electronics industry by enhancing the ability of subsidiaries to develop new products in Canada. However, not all countries share the view of the Canadian government that research and development on the part of subsidiary companies makes a net positive contribution to the host country. Some countries, noteably France, take the position that the research and development activities of subsidiary companies can have a detrimental effect on the creation of a strong, domestically-owned research base.

One way to deal with the existing and potential disadvantages of foreign-ownership would be to attempt to control the behaviour of foreign-controlled firms. Because the wide diversity of products and operations in the electronics industry necessarily leads to significantly different behaviour patterns, it would be very difficult to establish practical and effective behavioural guidelines which would not risk

severely limiting the efficiency of the industry and impose an onerous paperwork burden for both government and industry.

Another approach would be to reduce foreign ownership by requiring foreign-controlled companies to sell a minority interest to Canadian stockholders. Such a move would, however, still leave control in the hands of the parent and would give the Canadian shareholders a relatively poor investment position.

If the existing and potential disadvantages of foreign control of the electronics industry are considered to outweigh the advantages, another way to reduce foreign ownership in the long term would be to stimulate the development of Canadian-controlled companies. Since the Canadian electronics industry is expanding and since the domestic and worldwide demand for electronics products can be expected to continue to grow, support of Canadian ownership would, within a reasonable length of time, result in a significantly higher proportion of the industry being Canadian-controlled. If considered desirable, a policy to support Canadian ownership might involve any or all of the following:

1. Adoption of a "buy-Canadian" policy, with a defined limit to the advantage given Canadian suppliers, wherein the "Canadian" would favour, but not necessarily be restricted to, Canadian-controlled companies. To be effective such a policy would have to apply to all levels of government as well as to their agencies.

2. Governments could create, through the example of their own activities, a trend toward greater confidence in things Canadian. This could be accomplished through wide publication of the governments' possible future policy of supporting the development of new products within Canada through their own purchasing policy and that of their agencies.

3. Government could take steps to create within the financial and banking system a greater availability of funds for small innovative companies in the electronics industry. Such steps would have to recognize and deal with the fact that innovation, which characterizes this industry, necessarily involves comparatively high risk.

4. Government could modify its taxation and industrial assistance programs to favour Canadian-controlled companies.

5. Recognition in government policies and programs that the development of Canadian multinational companies in this industry might prove to be of significant advantage to Canada and necessary for certain segments of the industry to achieve the volume base required to support development activity at home.

6. Government could take steps to reduce the probability of takeover of small and growing Canadian-controlled companies by foreign companies or by Canadian companies which are foreign-controlled. This would require a recognition of the fact that, with so much of the industry already controlled by foreign companies, and with such wide and diverse electronics manufacturing operations abroad, a Canadian-owned company which comes up for sale is often likely to be worth more to a foreign buyer than to a domestic buyer. This is because the value of an operation is higher where a similarity of business exists than where one does not. It is usually more advantageous to buy an existing operation than to start from scratch in setting up a new one if a foreign firm wishes to establish itself in the Canadian market.

   If steps are not taken to reduce the relative attractiveness to foreign companies of Canadian-owned companies which come up for sale, it would seem inevitable that, so long as the political climate is otherwise attractive, the process of takeover will continue. As a result, increasing proportions of the Canadian electronics industry will probably come under foreign control. While the Foreign Investment Review Act may have some effect on reducing the number of takeovers, it does not explicitly recognize and deal directly with the fact that Canadian companies may be worth more to foreigners than to Canadians. If they are not carefully thought out and applied, steps taken in this regard could reduce the proceeds to Canadian owners from the sale of their businesses.

In summary, the world demand for electronics products is growing. In view of the difficult competitive position of the Canadian industry and the support for their own electronics industries given by foreign governments, the electronics industry should receive further government support if the health and growth of this industry is considered to be important. Furthermore, if the existing and potential disadvantages of increasing foreign ownership of this industry are considered to outweigh the advantages, steps should be considered to improve the climate for, and support of, Canadian ownership rather than attempting to reduce the degree of foreign ownership through a requirement of minority Canadian interest or limiting the behaviour of foreign-controlled companies.

APPENDIX A

DISCUSSION TOPICS
FOR THE ELECTRONICS INDUSTRY

CONFIDENTIAL

FOREIGN OWNERSHIP STUDY

FOR THE ONTARIO SELECT COMMITTEE ON ECONOMIC AND CULTURAL NATIONALISM

DISCUSSION TOPICS FOR THE ELECTRONICS INDUSTRY

The following pages contain a list of areas and topics for discussion with senior executives of selected companies in the Electronics Industry. All listed topics are not equally relevant to all companies; in the case of a particular company, the topics and the relative emphasis will be guided by the company's structure and activities and by the flow of discussions.

THESE DISCUSSIONS WILL BE CONFIDENTIAL. THE RESULTS OF ALL SUCH DISCUSSIONS WITH VARIOUS FIRMS WILL BE ASSEMBLED FOR COLLECTIVE INTERPRETATION AND THE NAMES OF PARTICIPATING FIRMS WILL NOT BE DISCLOSED TO THE COMMITTEE WITHOUT PRIOR APPROVAL FROM THE FIRMS INVOLVED.

MARKETS AND COMPETITION

1. Product Line

2. Marketing Approach

3. Market Types and Areas, Market Planning, Corporate Planning

4. Expansion Plans, Diversification

5. Domestic Market

   a) customers, dominance

   b) competition

   c) what limits your market?
   (do you have exclusive rights for your firm in Canada)

   d) are foreign subsidiaries more competitive?

   e) are imports becoming more competitive?

   f) what steps can you take to ensure or improve your competitive position?

   g) government action

   h) rationalization and specialization

   j) free trade

6. Foreign Markets

a) customers, dominance

b) how you compete

c) what limits your market?

d) are you becoming more (less) competitive?
Do you think foreign subsidiaries have a competitive advantage?

e) would you like to expand your foreign markets? What government services do you now take advantage of? Could government help further?

f) free trade.

IMPORTS

1. Import content of sales, quantity and type

- past

- present

- future

- effects on employement

2. Government Policy re restriction or relaxation

- components

- finished goods

EMPLOYMENT AND
MANAGEMENT OPPORTUNITIES

1. Pay, benefits, working conditions, labour force fluctuations.

2. Staff in senior management positions

3. Development of career potential

4. Training and development

5. Management talent in Canada.

RESEARCH AND DEVELOPMENT

- company developments

- R & D content of product costs, trends, product life

- sources of R & D for product lines. Hired services. Qualified staff

- limits on R & D potential in Canada

- should government be more involved

- use of existing government programs and services.

FINANCIAL

- funding sources

- sources of funds for expansion, takeover or major undertaking. Limits on potential

- advantages of subsidiary relationship

- effect of exchange controls.

CONTROL AND CONSULTATION

1. Reporting relationships with parent

2. Coordination

3. Financing

4. Long Range planning

5. Capital Investment

6. Diversification and acquisition

7. Marketing Strategies

8. Product line. Make/buy. Suppliers

9. R. & D.

10. Hiring

- management

- technical

- outside services
- other

11. Labour negotiations

12. Local autonomy/influence of international in labour negotiations. Effects of U.S. collective agreements, U.S. control of international.

COMMUNITY INVOLVEMENT

- re industry (eg. briefs, associations)
- re identification with city, support of local community activities.

GENERAL

- reasons for foreign takeover
- profitability of subsidiaries
  - service sharing
  - "know how"
  - resources
- Governmental controls, Services for Canadians only. Government purchasing policy. Buy Canadian.

APPENDIX B

STATISTICAL QUESTIONNAIRE FOR THE ELECTRONICS INDUSTRY

CONFIDENTIAL

FOREIGN OWNERSHIP STUDY

FOR THE ONTARIO SELECT COMMITTEE
ON ECONOMIC AND CULTURAL NATIONALISM

STATISTICAL QUESTIONNAIRE
FOR THE ELECTRONICS INDUSTRY

This questionnaire consists of statistical or factual questions which are designed to assist the Select Committee's consultants (Kates, Peat, Marwick & Co.) to properly interpret the opinions of senior management regarding foreign ownership issues.

THE INFORMATION REQUESTED WILL BE CONFIDENTIAL. IT WILL BE ARRANGED WITH THAT OF OTHER FIRMS AND THE FACT THAT YOUR FIRM WAS A SOURCE OF INFORMATION WILL NOT BE DISCLOSED TO THE COMMITTEE WITHOUT YOUR PRIOR APPROVAL.

Your cooperation in this study is appreciated.

MARKETS

(Please give data for the electronics segment of your business only)

1. What was the value of your sales for each of the last five years?

   (a) How was this broken down by major product line?

	1972	1971	1970	1969	1968
Total sales					
Product line 1.					
Identification					
Products line 2.					
Identification					
Product line 3.					
Identification					

   (b) How was this broken down between your own production and resale items?

	1972	1971	1970	1969	1968
% of sales produced					
% of sales resale					

2. If resales form a significant portion of your total sales (say over 10%), for each of the past five years please identify the percentage of dollar volume of resale items purchased in Canada, the U.S., the rest of the world.

	1972	1971	1970	1969	1968
% purchased in Canada					
% purchased in U.S.					
% purchased elsewhere					

3. Please identify for each of the past five years the percentage of your sales in Canada, the U.S, the rest of the world.

	1972	1971	1970	1969	1968
% of sales in Canada					
% of sales in U.S.					
% of sales elsewhere					

4. Please identify the percentages of your 1972 and 1968 sales in each of the above market areas that were consumer products, industrial products and components, products for government (e.g. defence, aerospace, etc.).

	1972	1968
Canada-Consumer		
-Industrial		
-Government		
U.S. - Consumer		
- Industrial		
- Government		
Elsewhere - Consumer		
- Industrial		
- Government		

EMPLOYMENT

(Please provide data for the electronics segment of your business only)

5. What was your total number of employees at the end of 1972? At the end of each of the previous four years? What percentage of these employees were located in Ontario, the rest of Canada, abroad (in your subsidiaries) if applicable?

	1972	1971	1970	1969	1968
Total employment					
% in Ontario					
% in rest of Canada					
% Abroad					

6. Please identify plant expansions or contractions which have taken place during the last five years. For each please indicate the year, the location, the change in employment, and whether it was (1) a new plant, (2) an addition, (3) a shut down, (4) a cut back.

Location	Year	Employment Change	Type

7. Please indicate the number of professional engineers and qualified scientists on your staff in each of the last five years. What proportion of these were located in Ontario?

	1972	1971	1970	1969	1968
Number of engineers and scientists					
% in Ontario					

8. If all the above were not engaged in research and development activities, please give the same information for those who were involved in research and development

	1972	1971	1970	1969	1968
Number of engineers and scientists					
% in Ontario					

EXPENDITURES (R & D, CAPITAL, OPERATING)

(Please provide data for the electronic segment of your business only)

9. For each of the last five years, please indicate your expenditures on research and development. Please indicate the percentage of the total that was undertaken with government assistance. Please also indicate the percentage spent on R & D carried out by your own staff, by Canadian contractors, by foreign contractors (including your parent where you initiated and paid for the investigation).

	1972	1971	1970	1969	1968
Expenditures on R & D					
% with government assistance					
% by staff					
% by Canadian contractors					
% by Foreign contractors					

10. Please identify your expenditures on capital equipment during each of the past five years and the percentages obtained in Canada, the U.S., other countries.

	1972	1971	1970	1969	1968
Total expenditures on Capital Equipment					
% obtained in Canada					
% obtained in U.S.					
% obtained elsewhere					

11. Please indicate as a percentage of total sales last year the total value of purchases of raw materials, components, and finished goods _____%

Has this changed significantly during the past five years? if so, please give details.

12. What percentage of raw materials and of component parts were purchased during each of the last five years from the U.S.? From other foreign countries?

	1972	1971	1970	1969	1968
Raw materials					
% purchased from U.S.					
% purchased from other countries					
Components					
% purchased from U.S.					
% purchased from other countries					

13. Please indicate the direct labour content as a percentage of the value added of your production last year?

Value added $ _____

Direct Labour Content _____%

Has this changed significantly during the last five years? If so, please give details.

FINANCIAL

(For the company as a whole)

14. Please indicate the percentage of your equity owned by Canadian residents _____%

by U.S. residents _____%

by other foreign residents _____%

15. If you are a subsidiary, please indicate the percentage of your equity owned by the parent company

_____%

ADVERTISING AND ENGINEERING SERVICES

16. (a) What was the total amount you spent on engineering consultants last year, five years ago? How much did you pay for each engineering firm? How much was the amount spent for consultants relative to your in-house engineering services?

(b) Which engineering firms were Canadian? Which firms that were not Canadian worked out of Canadian offices when employed by your company? Which firms were also used by your head office (if outside Canada) and by your foreign affiliates?

(c) What were the skills required for the project for which the engineering firms were hired? Of the foreign firms hired, was a check made to determine whether Canadian firms had the required skills?

(d) In what cases was the hiring of an engineering firm made necessary by its holding of exclusive patents?

17. (a) What was your total advertising budget in Canada last year, five years ago? What percentage of the advertisements and commercials you used in Canada were produced outside Canada primarily for use outside Canada?

(b) If your head office is located outside Canada, what is your authority with respect to:

- overall marketing strategy
- advertising decisions
- the setting of marketing spending levels
- the advertising agency to be employed?